PROJECT 13B

Tehama-Colusa Canal Authority Tehama-Colusa Canal Conveyance of Water to Sites Reservoir

1. Project Description

Project Type:	**System Improvement**
Location:	**Tehama and Glenn counties**
Proponent(s):	**Tehama-Colusa Canal Authority (TCCA)**
Project Beneficiaries:	**TCCA water users, other Sacramento Valley water users, Delta water quality**
Total Project Components:	**Short-term components, potentially utilize TCCA Main Canal to convey water to the proposed Sites Reservoir facility**
Potential Supply:	**None**
Cost:	**Unknown at this time**
Current Funding:	**None**
Short-term Components:	**Feasibility study and conceptual design**
Potential Supply (by 2003):	**None**
Cost:	**$400,000**
Current Funding:	**None**
Implementation Challenges:	**Potential increased river diversions, water rights, transfers, environmental impacts of construction**
Key Agencies:	**TCCA**

Summary

The focus of this project is to evaluate the feasibility of using the Tehama-Colusa Canal (TC Canal) to convey water to a future Sites Reservoir facility. Figure 13B-1 shows the location of the TC Canal and the proposed Sites Reservoir. The Sites Reservoir off-stream storage project is one of the most widely studied and favorably rated potential projects north of the Delta. Since the 1960s, several studies performed by the Department of Water Resources (DWR), U.S. Bureau of Reclamation (USBR), and private parties have looked at a variety of project configurations based on reservoir size and water supply sources. The most

recent assessment efforts by DWR are presented in the 1996 report *Reconnaissance Survey-Sites Offstream Storage Project*. The CALFED programmatic Record of Decision (ROD) specifically includes further study of the Sites Reservoir project, as directed by a Joint Planning Program developed in cooperation with local stakeholders.

Earlier studies of the Sites Reservoir project have considered three primary conveyance facilities to be used for conveying Sacramento River water to the reservoir: the TC Canal, the Glenn-Colusa Irrigation District (GCID) Canal, and a diversion and conveyance facility (pipeline or canal). The most beneficial combination of these facilities has not been determined at this time. The purpose of this proposed study is to evaluate in detail the use of the TC Canal. It is anticipated that the results of this study may then be used in conjunction with other studies evaluating the GCID Canal and the use of a new diversion to determine the optimal combination of supply and conveyance facilities for Sites Reservoir.

Sites Project Overview

The Sites Project would be located about 10 miles west of Maxwell in Antelope Valley. Three principle projects of differing size have been proposed for this location: "Small Sites" with a 1.2-million acre-feet (maf) reservoir, "Large Sites" with a 1.8-maf reservoir, and the Colusa Project with a 3.0-maf reservoir. The Colusa Project has been eliminated from further study by CALFED; future study efforts will focus on storage up to approximately 1.9 maf. The small and large Sites projects reservoirs would be formed by two main dams on Stone Corral Creek (Sites Dam) and Funks Creek (Golden Gate Dam), with several smaller saddle dams. The reservoirs would be filled using excess winter-season flows from the Sacramento River. This water would be diverted and conveyed to the project area using either/both the TC Canal or the GCID Canal together with a new series of pump stations, pipelines, and regulating reservoirs. The stored water would be released back into either canal for distribution or into the Colusa Basin Drain for conveyance to the Sacramento River.

The average annual drought-period yield from the small and large Sites projects would be 155,000 acre-feet per year (afy) and 240,000 afy, respectively. The estimated capital costs, in 1995 dollars, are $230 million and $450 million, respectively. According to these figures, the approximate unit cost for dry-period yield is $1,484 per acre-foot for the Small Sites Project and $1,875 per acre-foot for the Large Sites Project.

TC Canal

The TC Canal originates at the Sacramento River in Red Bluff, California. The canal extends 111 miles from north to south through Tehama, Glenn, Colusa, and Yolo counties. The canal terminates about 2 miles south of Dunnigan, California. It delivers Central Valley Project (CVP) supplies from the Sacramento River water to more than a dozen water districts in the four counties. The capacity of the canal varies from approximately 2,530 cubic feet per second (cfs) at the upstream end to 1,700 cfs at its terminus. The TC canal was constructed under a long-term plan based on supplying water to a future service area significantly larger than the current service area. The canal and its related major structures (such as siphons check structures) have capacities varying from 2,530 cfs at the Red Bluff Diversion Dam to 2,100 cfs to Funks Reservoirs, located about 5 miles northwest of Maxwell.

As part of a future Sites Reservoir supply, earlier studies have assumed enlargement of the canal capacity to 2,530 cfs from Red Bluff to Funks Reservoir would be beneficial. A summary of the existing capacities (Q in cfs) and the proposed capacities by reach to the TC/GCID Intertie are summarized as follows:

- Red Bluff Diversion Dam to Mile Post (MP) 3.7 (Check #2): Q = 2,530 cfs, no increase
- MP 3.7 to MP 12.99 (Check #5, Thomas Creek): Q = 2,300 cfs, increase of 230 cfs
- MP 12.99 to MP 29.77 (Check #9, Stony Creek): Q = 2,200 cfs, increase of 330 cfs
- MP 29.77 to MP 64 +/- (TC/GCID Intertie): Q = 2,100 cfs, increase of 430 cfs
- MP 64 to MP 66.87 (Funks Reservoir): Q = 2,100 cfs, increase 430 cfs

The above summary indicates that approximately 54 miles of the TC Canal may need to operate at future capacity increases of between 230 cfs and 430 cfs. The proposed study would evaluate alternatives for increasing the capacity of the canal and related structures in each of these major reaches.

Short-term Component

The short-term component for this project is to undertake a feasibility study, which would include conceptual design for the major canal modifications. The cost for this study would be approximately $400,000. The estimated time to complete the study is 8 months. The scope of the study would include the following primary tasks:

- Collect and review existing facility and operations data
- Develop design and operations criteria
- Develop a refined hydraulics model of the canal, with unsteady flow analysis capability
- Develop facility improvement alternatives for a range of capacities
- Develop project alternative costs
- Evaluate and rank project alternatives
- Prepare an engineering feasibility report

Long-term Component

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

The long-term objective of this feasibility study would be to potentially utilize the TCCA Main Canal to convey water to the proposed Sites Reservoir facility.

2. Potential Project Benefits/Beneficiaries

TCCA water users, other Sacramento Valley water users, and Delta water quality could potentially benefit from this proposed project in the following ways:

- **TCCA Water Users—**In terms of supporting the Sites Reservoir project, the proposed project (study) benefits would be realized only if a future Sites Reservoir were eventually constructed. Water users in the service area would benefit from more reliable water supplies under most hydrologic conditions as a result of the increased regional yield from Sites Reservoir. The use of the TC Canal for conveyance of Sites Reservoir supply may also allow a portion of the canal operating and maintenance costs to be applied to these new uses, thereby reducing the annual canal operating costs that must be funded by TCCA member districts.
- **Other Sacramento Valley Water Users—**The significant increase in dry-year supplies and overall regional operating flexibility provided by Sites Reservoir would benefit many other users in the Sacramento Valley.
- **In-stream Flows and Delta Water Quality—**Preliminary modeling and gaming exercises done as part of the Sacramento Basinwide Water Management Plan indicate that Sites Reservoir and the related conveyance systems could be used to improve the quantity of in-stream Sacramento River flows and Delta outflow under certain hydrologic conditions because of the availability of net new seasonal water supply and reduced seasonal diversions on the Sacramento River. The fundamental operating concept for Sites Reservoir is that "surplus water" would be diverted and stored in the reservoir during wet years and exported to in-basin users and the Delta during dry years.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to –30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

The estimated cost of the study would be approximately $400,000.

4. Environmental Issues

This project is primarily an exercise in data collection and analysis. No physical impacts are anticipated to occur as a result of this phase of the project, although the results of the project may lead to the development of future projects.

A draft California Environmental Quality Act (CEQA) checklist was not prepared for this proposed project because no physical alterations to the environment would occur as a result of this proposed action.

5. Implementation Challenges

Possible implementation challenges could include potential increased river diversions, water rights, transfers, and environmental impacts of construction.

6. Implementation Plan

The implementation plan for the study would consist of a more detailed scoping effort for the study, securing the needed funding, and completing the study. The study results would then be integrated with other ongoing work related to the Sites Project, such as the DWR ISI work. Figure 13B-2 presents the proposed implementation schedule.

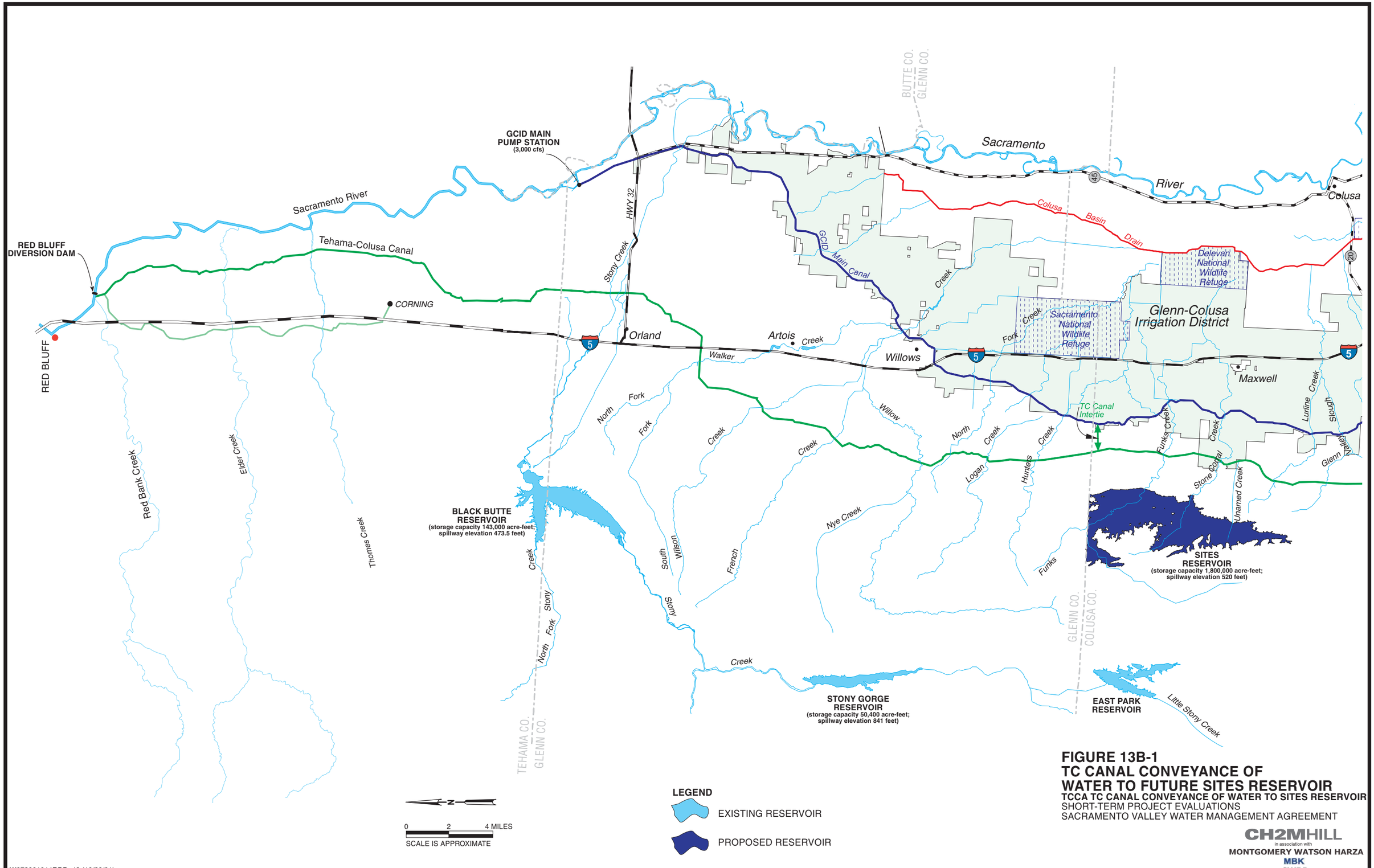

FIGURE 13B-1
TC CANAL CONVEYANCE OF WATER TO FUTURE SITES RESERVOIR

TCCA TC CANAL CONVEYANCE OF WATER TO SITES RESERVOIR
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

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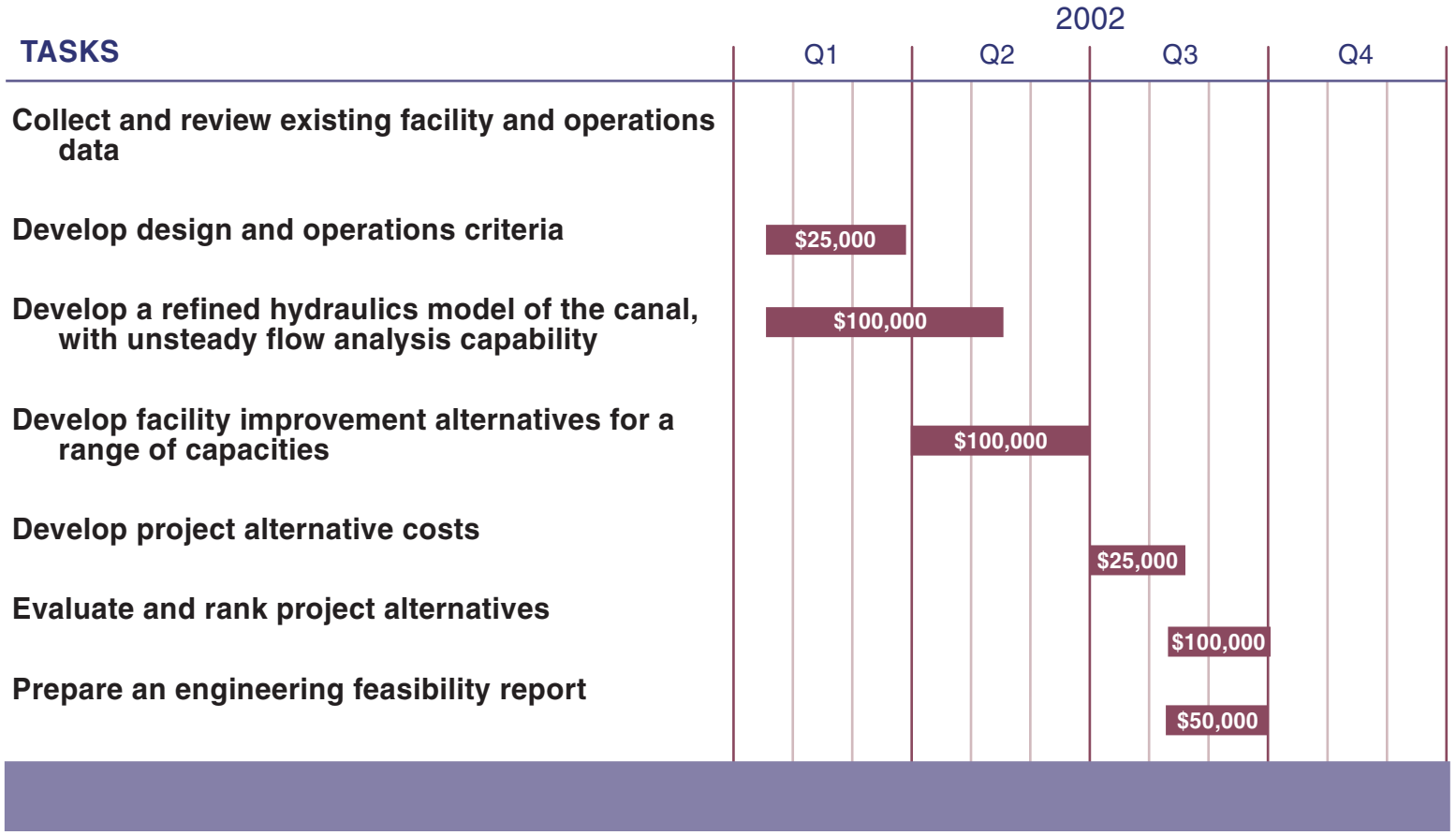

FIGURE 13B-2
PRELIMINARY IMPLEMENTATION SCHEDULE
TCCA TC CANAL CONVEYANCE OF WATER TO SITES RESERVOIR
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

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